A Sustainable Identity: Creativity of Everyday Design

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ABSTRACT
In this paper we explore sustainability in interaction design by reframing concepts of user identity and use. Building on our work on everyday design, we discuss design-in-use: the creative and sustainable ways people appropriate and adapt designed artifacts. We claim that reframing the user as a creative everyday designer promotes a sustainable user identity in HCI and interaction design.

Author Keywords
Sustainability, design-in-use, appropriation, ethnography

INTRODUCTION
This paper proposes that reframing use and the user when considering digital artifacts for the home can contribute to sustainability in interaction design. We make this claim based on our research into the notion of everyday design [8, 9]. Everyday design offers a formal lens through which to reconsider interactions with and the use of designed artifacts in the home. The everyday designer is a creative agent among other everyday designers who together create and redesign artifacts long after the products have left the hands of professional designers. We advocate that an understanding of the user that includes the notion of the everyday designer together with a new set of design-in-use principles offers a more sustainable approach to interaction design.

Our approach is in sympathy with socio-technical user studies that broadly speaking examines the social construction of technology, i.e. looking past the impacts of technology to the social shaping of it [1, 5, 7]. We've seen in our studies a resistance to a consumer identity on behalf of users that we believe can be leveraged and built upon through design to establish a sustainable identity for users.

Our ethnographic studies form the basis for this discussion.

Figure 1. A hanging wire fruit and vegetable basket appropriated to keep notes and lists that are visible to the household.

We found families to be participatory creative agents [8, 9] in an ongoing continuum of design that extends from the professional designer to design-in-use in the home. Families create, remake or modify systems by appropriating and transforming designed artifacts and surroundings [9]. For example, we often appropriate designed artifacts and surroundings for new uses such as hanging a jacket on a chair or storing items on a ledge, stair or short wall. Such acts are typically expedient and temporary; however, they can also be adapted to become the center of ongoing routines, and can be combined to create more permanent systems. From one of our studies, a participant, over several years, dramatically redesigned the use of her planner book for organizing notes and lists into an embodied and ambient system that included a doorway, a chalkboard, a fruit basket, a fridge door, paper lists, and sticky notes [9](see figure 1). These actions represent complex and unique design responses that meet specific needs in the household.

Inherent in these actions are the principles of invention, renewal, and reuse, which are principles at the heart of a sustainable practice. The implications of our findings are that the role of a creative agent in the life of artifacts is a sustainable identity for users that emphasizes sustainability in interactions with design artifacts. This is in direct contrast with a consumer identity that engenders patterns of consumption and disposal. The motivation for this research is to promote the creation of interaction design artifacts that can ultimately be creatively redesigned by everyday designers. We found that the actions of the everyday designer with today's non-digital artifacts strongly suggest new desirable attributes for tomorrow's digital artifacts.

Design-in-use Principles
The pressing question is how to shape the ethnographic accounts and the reflections from a Sustainable Interaction Design [2, 6] perspective into an actionable approach for designers in practice and research. We advocate that designers reconsider the life cycle of artifacts to include design-in-use as a critical factor:

*Design-in-use is highly creative making a user unpredictable in the best sense of the word***.** This principle acknowledges the role of another creative agent, the everyday designer who engages in renewal and reuse over consumption. The creativity of the user establishes the foundation (not the challenge) for a sustainable identity; unpredictability is reframed as a positive attribute of the user rather than an obstacle to "proper use".

Design artifacts are resources for further creativity. Artifacts will be used in ways beyond their designed use. Appropriation becomes a design goal in design-in-use. It asks that professional designers design artifacts so they are open to and even invite use in ways that were not intended in the original design.

Design-in-use qualities emerge over time. Design artifacts exist in an evolutionary and complex environment. The value and use of artifacts change over time as they are combined with other artifacts into systems, and renewed through discovery of new uses. Recognizing that qualities emerge over time requires designers to consider more than just the explicit usefulness of an artifact but to also include passive usefulness, emotional attachments, and other reasons for longevity.

It should be noted that the idea of designing systems in use is not foreign to HCI. Austin Henderson and Morten Kyng [4] discussed the need for "tailoring" of software systems for the changing needs of workers. It was not important who made the changes in the system, but it was important that the design and architecture of software allow for future modifications that would be discovered as necessary through use.

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Geoff Cooper and John Bowers in a pivotal essay on the rhetorical discourse of HCI [3], argue that the concept of the user was created as a new discursive object that was exclusively the concern of HCI. The user remains at the center of all discursive claims to HCI and it should come as no surprise that a sustainable notion of HCI involves a reformulation of the user. We claim that the everyday designer represents a sustainable identity for the user, one that is different than the traditional HCI construct. The differences include:

From user to designer: the new identity rests on the understanding that we all engage in design actions in order to reshape and improve the world around us. Appropriations of interaction design artifacts lead to renewal, reuse, and transformations. With this comes the understanding that the value and purpose of design artifacts and the environment can be creatively modified. This supports creative ownership and ultimately extends the life and value of digital artifacts.

From over-determined to underdetermined: designers that radically limit defining a user embraces the idea of another creative agent. This leaves creative space for others to engage design artifacts and surroundings as opportunities for reuse and renewal.

From consumer to creator: This shifts the identity of users from actors consuming design products to actors creating products. A user as a creator will look to design artifacts for their potential to serve as design or creative resources. The degree to which a designed artifact can be appropriated is directly linked to its degree of sustainability.

CONCLUSION

The aim of this paper is to show how existing interactions and relationships with non-digital artifacts point the way to a sustainable approach to interaction design that is informed by a new theoretical concept of use. This research suggests a new identity for the user that is creative at its heart, and can lead to sustainable interaction with digital artifacts. We claim that the lens of *everyday design* reveals that people often engage design artifacts through *design-in-use* in ways that lead to the sustainable actions of renewal, reuse and invention. This offers an alternative view of end-users that is resistant to the consumer cycle that is typical of digital artifacts. We believe this work compliments SID design principles [2] and contributes to the growing research in sustainability [6] and HCI by expanding the identity of a user to include sustainability.

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